

## CLAIMS

We claim:

1. A method for filling a gap at the junction between two lengths of coated pipe, the method comprising:
  - enclosing the gap with a mold having an opening;
  - introducing a joint filling composition into the mold; and
  - allowing the joint fill composition to react and form a foam;wherein the joint filling composition comprises:
  - an A-side component comprising between about 75 weight % to about 85 weight % of polymeric MDI and between about 15 weight % and about 25 weight % 2,2,4-trimethyl-1,2-pentanediol diisobutyrate; and
  - as B-side component comprising between about 35 weight % and about 45 weight % of amine based polyether polyol, and about 50 weight % to about 65 weight % 2,2,4-trimethyl-1,2-pentanediol diisobutyrate.
2. The method of claim 1, wherein the catalyst comprises an amine catalyst.
3. The method of claim 1, wherein the composition further comprises water.
4. The method of claim 1, wherein the composition further comprises hydrofluorocarbon blowing agent.
5. The method of claim 1, wherein the composition further comprises a silicone based surfactant.
6. The method of claim 1, further comprising the step of removing the mold after formation of the polymer.
7. The method of claim 1, wherein the polymer comprises a polyurethane foam having an open cell content of about eighty percent or higher.
8. The method of claim 1, wherein the polymer comprises a polyurethane foam having an open cell content of about ninety percent or higher.

9. The method of claim 1, wherein the polymer comprises a polyurethane foam having a density of between about 2 and about 12 pounds per cubic foot.

10. The method of claim 1, further comprising the step of adding filler material to the mold, after the enclosing step and before the step of introducing the reaction composition.

11. The method of claim 1, further comprising the step of adding a permeable membrane into the mold before the step of introducing the reaction composition.

12. The method of claim 1, further comprising the step of adding a permeable membrane into the mold before the step of introducing the reaction composition.

13. A method for filling a gap at the junction between two lengths of coated pipe, the method comprising:

enclosing the gap with a mold having an opening;

introducing a composition comprising polyol, isocyanate, and an ester diluent into the mold; and

allowing the composition to react and form a polymer.

13. The method of claim 13, wherein the polyol comprises an amine based polyether polyol.

14. The method of claim 13, wherein the isocyanate comprises polymeric MDI.

15. The method of claim 13, wherein the ester comprises a diester.

16. The method of claim 13, wherein the insoluble ester comprises 2,2,4-trimethyl-1,2-pentanediol diisobutyrate.

17. The method of claim 13, wherein the composition further comprises water.

18. The method of claim 13, wherein the composition further comprises hydrofluorocarbon blowing agent.

19. The method of claim 13, wherein the composition further comprises hydrocarbon blowing agent.

20. The method of claim 13, wherein the composition further comprises a silicone based surfactant.

21. The method of claim 13, further comprising the step of removing the mold after formation of the polymer.

22. The method of claim 13, wherein the polymer comprises a polyurethane foam having an open cell content of about eighty percent or higher.

23. The method of claim 13, wherein the polymer comprises a polyurethane foam having an open cell content of about ninety percent or higher.

24. The method of claim 13, wherein the polymer comprises a polyurethane foam having a density of between about 2 and about 12 pounds per cubic foot.

25. The method of claim 13, wherein the polymer comprises an elastomeric polymer.

26. The method of claim 13, wherein the isocyanate comprises an isocyanate prepolymer.

27. The method of claim 13, further comprising the step of adding filler material to the mold, after the enclosing step and before the step of introducing the reaction composition.

28. The method of claim 13, further comprising the step of adding a permeable membrane into the mold before the step of introducing the reaction composition.

29. A reaction composition for infilling a gap at the junction between two lengths of coated pipe, comprising:

an A-side component comprising polymeric MDI and 2,2,4-trimethyl-1,2-pentanediol diisobutyrate; and

a B-side component comprising an amine based polyether polyol, and 2,2,4-trimethyl-1,2-pentanediol diisobutyrate.